

# CLAIMS

1. A process for forming a silicon oxide layer of non-uniform thickness on a surface of a silicon substrate, characterized in that it comprises:

a) the implantation in predetermined regions of the substrate of an effective dose of atoms of a chemical species which increases the rate of oxidation of the substrate; and

b) the growth of a silicon oxide layer of non-uniform thickness by oxidation on the surface of the substrate.

2. The process as claimed in claim 1, characterized in that the chemical species are chosen from Si, Ge, Ar, Ne, He, P and As.

3. The process as claimed in claim 1 or 2, characterized in that the implantation step is an ion implantation step.

4. The process as claimed in any one of claims 1 to 3, characterized in that the implantation energy is between 2 and 100 keV, preferably 2 to 80 keV.

5. The process as claimed in any one of claims 1 to 4, characterized in that the implanted dose is from  $5 \times 10^{13}$  to  $5 \times 10^{15}$  atoms/cm<sup>2</sup>, preferably  $1 \times 10^{15}$  to  $5 \times 10^{15}$  atoms/cm<sup>2</sup>.

6. The process as claimed in any one of claims 1 to 5, characterized in that the growth step by oxidation is an oxidation step in a furnace, by plasma oxidation, electrochemical oxidation or rapid thermal oxidation.

7. The process as claimed in claim 6, characterized in that the step of growing the silicon oxide layer is an oxidation step in a furnace at a temperature of at least 300°C and in an oxidizing atmosphere.

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